

Rapid Watershed Assessment

Copperas Duck

(IA / IL) HUC: 07080101



Rapid watershed assessments provide initial estimates of where conservation investments would best address the concerns of landowners, conservation districts, and other community organizations and stakeholders. These assessments help land-owners and local leaders set priorities and determine the best actions to achieve their goals.

Introduction

The Copperas-Duck 8-Digit Hydrologic Unit Code (HUC) subbasin is located within the Southern Iowa Rolling Loess Prairie, Upper Mississippi Alluvial Plain, Western Dissected Illinoian Till Plain, Rock River Hills, and River Hills Level IV Ecoregions of Iowa and Illinois.

Approximately ninety five percent of the 632,595 acres in this HUC are privately owned. The remaining acres are state, county, federal, and miscellaneous other public lands, or covered by open water.

Assessment estimates indicate 1,376 farms in the watershed. Approximately forty six percent of the operations are less than 180 acres in size, forty five percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

The main resource concerns in the watershed are sediment and erosion control, stormwater management, water quality, water quantity, animal waste management, nutrient management and fish and wildlife habitat.

Many of the resource concerns relate directly to topography, agricultural practices and increased development in the region resulting in flooding and increased sediment and pollutant (fecal coliform, nitrogen, phosphorus) loadings to surface and ground waters.



County Totals

<i>County</i>	<i>Acres in HUC</i>	<i>% HUC</i>
Clinton	51,289.4	8.11%
Scott -IA	119,652.7	18.91%
Muscatine	90,143.6	14.25%
Louisa	34,923.0	5.52%
Mercer	63,600.1	10.05%
Carroll	37,754.5	5.97%
Rock Island	165,767.1	26.20%
Whiteside	69,648.6	11.01%
Total acres:	632,595	100%



Physical Description

The Copperas Creek Watershed is approximately 47,127 acres, located in southern Rock Island County Illinois. The creek flows westerly, and meanders through rural Rock Island County. The upland landscape consists of loess hills with moderately steep to very steep side slopes and narrow to moderately wide gently sloping to moderately sloping ridge tops. Copperas Creek changes to a straighten channel when it crosses the Mississippi River flood plain and outlets into the Mississippi River. The major crops in the floodplain are corn and soybeans. Hardwood forest dominate the upland side slopes. Livestock and grain farming are dominant in the less sloping upland areas.

Duck Creek Watershed is approximately 42,831 acres in western Scott County, Iowa. The landscape ranges from level to moderately steep uplands. Watershed land use consists of approximately 45 percent agricultural use, including corn, soybeans, and pastureland. The remainder of the watershed consists of urban and commercial land uses. The headwaters of Duck Creek hold most of the agricultural land in the watershed, as the creek flows east it passes through the urbanized areas of Davenport and Bettendorf before entering the Mississippi River.

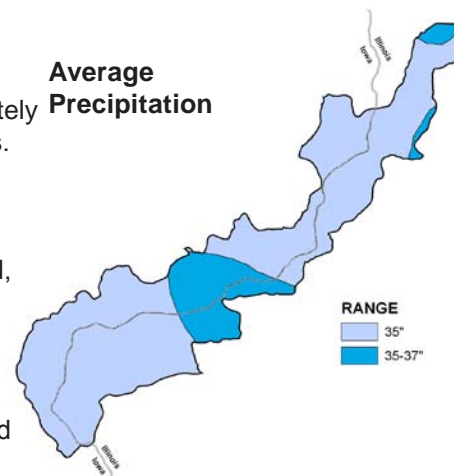
There are more than 1,240 miles of named and unnamed small streams, in addition to Copperas Creek, Duck Creek, and Mississippi River. Approximately 109 miles are located within the Davenport-Rock Island-Moline urban areas. The remaining 1,131 miles of streams are located in rural areas.

Precipitation in the Copperas-Duck watershed ranges from 35 to 37 inches each year. Nearly 50 percent of the land use in the watershed is agricultural, with crop and pasturelands accounting for almost 60 percent of the overall acres.

The predominate land covers/land uses are row crops (50 percent), Residential/Commercial Development (17 percent), Forest (13 percent), and Grass, Pasture, Hay (10 percent).



Average Precipitation



Ownership

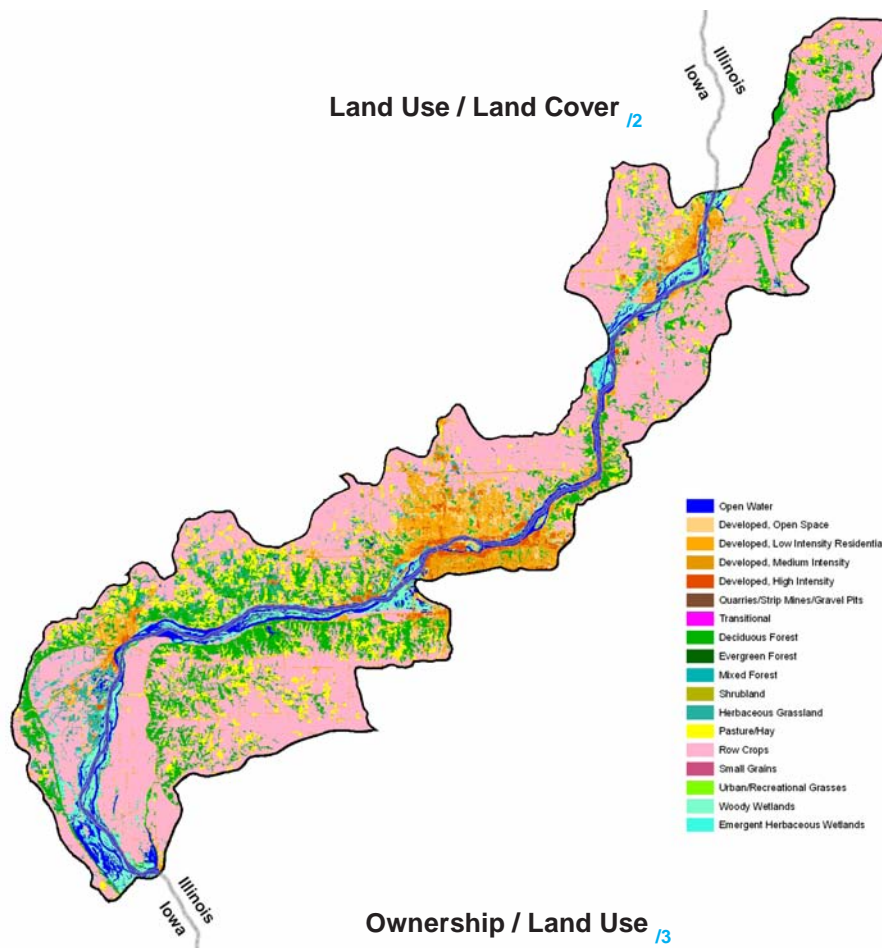
Ownership Type	Acres	% of HUC
Conservancy	-	-
County	899.8	0.1
Federal	25,658.4	4.1
State	5,414.7	0.9
Other (City, Municipal, Etc.)	1,283.9	0.2
Tribal	-	-
Private Major	1.6	0.0
Private	599,336.9	94.7
Total Acres:	632,595	100



* Ownership totals derived from Iowa and Illinois GAP Stewardship data and are the best suited estimation of land stewardship available on a statewide scale at time of publication. See the bibliography section of this document for further information.

Ownership / Land Use

The Copperas-Duck Watershed covers an area of 632,206 acres. Approximately 95 percent of the watershed is owned by private landholders (600,531 acres). Public ownership in the watershed consists of state, federal, county, and city governments. Land use by ownership type is represented in the table below.



Landcover/Use	Public		Private**		Tribal		Total Acres	Percent
	Acres	% Public	Acres	% Private	Acres	% Tribal		
Forest	980	0.2%	82,589	13.1%	0	0.0%	83,569	13.2%
Grain Crops	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Grass, etc	817	0.1%	63,401	10.0%	0	0.0%	64,218	10.2%
Orchards	0	0.0%	0	0.0%	0	0.0%	0	0.0%
Row Crops	251	0.0%	312,796	49.5%	0	0.0%	313,047	49.5%
Shrub etc	4	0.0%	253	0.0%	0	0.0%	257	0.0%
Wetlands	11,349	1.8%	17,263	2.7%	0	0.0%	28,613	4.5%
Residential/Commercial	963	0.2%	103,732	16.4%	0	0.0%	104,695	16.6%
Open Water*	17,311	2.7%	20,497	3.2%	0	0.0%	37,808	6.0%

* ownership undetermined

** includes private-major

Watershed Totals:	31,675	5.01%	600,531	94.99%	0	0.00%	632,595	100.0%
--------------------------	---------------	--------------	----------------	---------------	----------	--------------	----------------	---------------

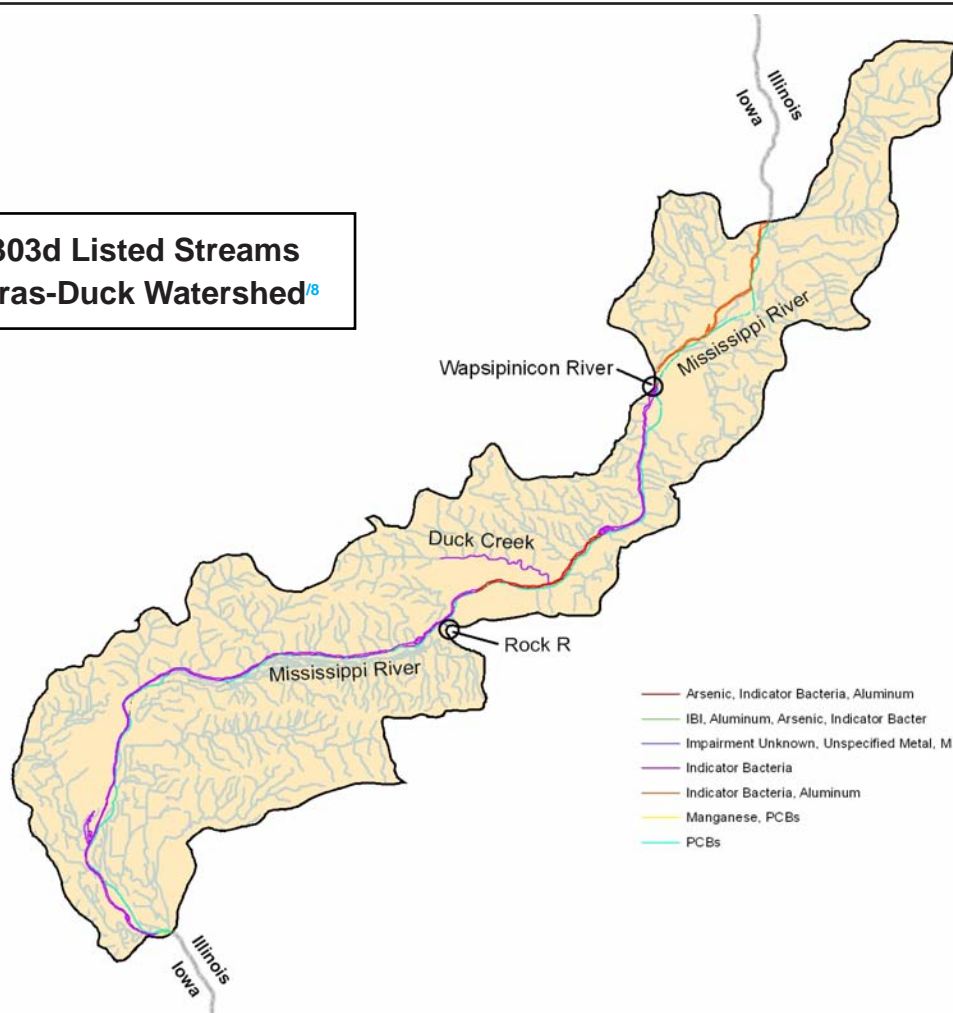
Physical Description (continued)

		ACRES	cu. ft/sec	
Stream Flow Data	USGS 05420500 Mississippi River at Clinton, IA	2007 Total Avg.	42,590	
		May – Sept. 2007 Avg.	42,030	
Stream Data ¹⁴ (*Percent of Total HUC Stream Miles)		ACRES/MILES	PERCENT	
	Total Miles – Major (100K Hydro GIS Layer)	1,390	---	
	303d/TMDL Listed Streams (DEQ)	140	10.1%	
Riparian Land Cover/Land Use ¹⁵ (Based on a 100-foot buffer on both sides of all streams in the 100K Hydro GIS Layer)	Forest	8,859	25.7%	
	Grain Crops	0	0.0%	
	Grass, etc	3,664	10.6%	
	Orchards	0	0.0%	
	Row Crops	11,020	32.0%	
	Shrub etc	2	0.0%	
	Wetlands	2,702	7.8%	
	Residential/Commercial	3,137	9.1%	
	Open Water	5,068	14.7%	
	Total Buffer Acres:	34,453	100%	
Crop and Pastureland Land Capability Class ¹⁶ (Croplands & Pasturelands Only) (1997 NRI Estimates for Non-Federal Lands Only)	1 – slight limitations	55,883	9.9%	
	2 – moderate limitations	188,847	33.4%	
	3 – severe limitations	153,459	27.2%	
	4 – very severe limitations	56,423	10.0%	
	5 – no erosion hazard, but other limitations	22,100	3.9%	
	6 – severe limitations; unsuitable for cultivation; limited to pasture, range, forest	40,192	7.1%	
	7 – very severe limitations; unsuitable for cultivation; limited to grazing, forest, wildlife habitat	47,929	8.5%	
	8 – miscellaneous areas; limited to recreation, wildlife habitat, water supply	160	0.0%	
Irrigated Lands ¹⁷ (1997 NRI Estimates for Non-Federal Lands Only)	TYPE OF LAND	ACRES	% of Crop Lands	% of HUC
	Cultivated Cropland	8,900	2.8%	1.4%
	Total Irrigated Lands	8,900	2.8%	1.4%

Assessment of Waters

Section 303(d) of the Clean Water Act states that water bodies with impaired use(s) must be placed on a state's impaired waters list. A water body is "Impaired" or polluted when it fails to meet one or more of the Federal Clean Water Act's water quality standards. Federal Standards exist for basic pollutants such as sediment, bacteria, nutrients, and mercury. The Clean Water Act requires States to identify and restore impaired waters.

2006 303d Listed Streams Copperas-Duck Watershed⁸



Listed Stream	Impairment	Affected Use
Mississippi R	Manganese, PCBs	Aquatic Life Support/Fully, Fish Consumption/Partial,
Mississippi River	PCBs	Aquatic Life Support/Fully, Fish Consumption/Partial
Rock R	Impairment Unknown, Unspecified Metal, Mercury	Aquatic Life Support/Partial, Fish Consumption/Partial
Mississippi River	Arsenic, Indicator Bacteria, Aluminum	Drinking Water, Aquatic Recreation, Aquatic Life
Mississippi River	Indicator Bacteria	Aquatic Recreation
Mississippi River	Indicator Bacteria, Aluminum	Aquatic Life, Aquatic Recreation
Duck Creek	Indicator Bacteria	Aquatic Recreation
Wapsipinicon River	Indicator Bacteria	Aquatic Recreation
Mississippi River	IBI, Aluminum, Arsenic, Indicator Bacteria	Aquatic Life, Aquatic Recreation, Aquatic Consumption
Rock River Poplar Cr to Unnamed Cr	Mercury	Aquatic Consumption
Rock River Unnamed Cr to Unnamed Cr	Mercury	Aquatic Consumption
Rock River Unnamed Cr to Champepadan Cr	Mercury	Aquatic Consumption
Rock River Champepadan Cr to Elk Cr	Mercury, Turbidity	Aquatic Consumption and Aquatic Life
Elk River Headwaters to Rock R	Turbidity	Aquatic Life

Assessment of Waters

Impaired waters lists, updated every two years, identify assessed waters that do not meet water quality standards. The primary tool for addressing impaired waters is a pollution reduction plan called a Total Maximum Daily Load, or TMDL. After impaired use(s) have been identified, the TMDL process identifies all sources of each pollutant. The plan then determines how much each source must reduce its contribution in order to meet the applicable water quality standard. The Clean Water Act requires a completed TMDL for each water quality violation identified on a state's impaired waters list. Lakes or river reaches with multiple impairments require multiple TMDLs.

2006 TMDL Listed Lakes - Copperas-Duck Watershed⁸



Waterbody Name	Impairment	Affected Use
George (Rock Island)	Total Suspended Solids (TSS)	Aesthetic Quality
Lake of the Hills	Turbidity, Sediment	Aquatic Life
Shrickers Slough	Nutrients, Organics, Low DO, Ammonia, Turbidity	Aquatic Life

Common Resource Areas^{/9}

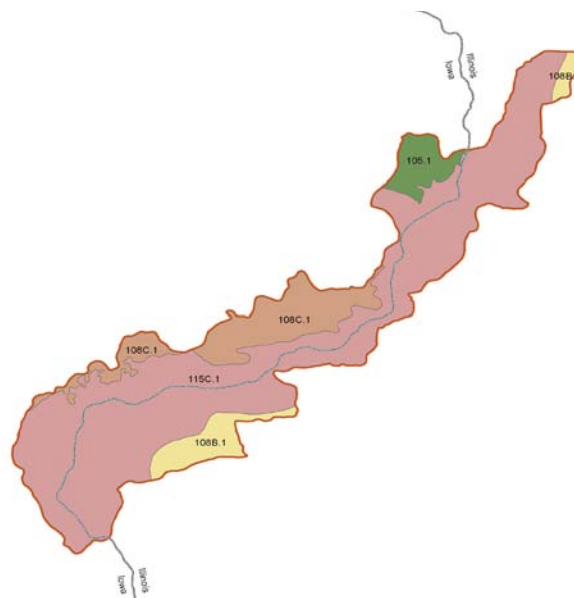
The Copperas-Duck Watershed encompasses four common resource areas, 105.1, 108B.1, 108C.1, and 115C.1.

115C.1 Central Mississippi Valley Wooded Slopes (Western and Northwestern Illinois): Mississippi and lower Illinois River valleys and adjacent slopes. Low areas consist of the nearly level flood plains and terraces. The Corps of Engineers maintains a levee along the Mississippi River. Adjacent uplands consist of loess hills with moderately steep to very steep side slopes and narrow to moderately wide gently sloping to moderately sloping ridgetops. Low areas are composed of poorly drained to well drained silty, clayey and loamy alluvial and outwash deposits. Corn and soybeans are the major crops. Upland areas consist of well drained to somewhat poorly drained light colored soils. Hardwood forest dominate the upland side slopes. Livestock and grain farming are dominant in the less sloping upland areas. Urban growth is evident in the area around the Quad Cities.

108B.1 Central Corn Belt Deep Loess and Drift Plains, Western Part: Nearly level and gently sloping, dark colored, poorly drained to moderately well drained soils formed in loess. The area is extensively subsurface drained and used for corn and soybean production. More diverse agriculture and the few remaining woodlands are in the more rolling areas associated with small to medium streams

108C.1 Iowa River Loess and Till: This area consists of silty soils on ridge tops and highly dissected side slopes with drainage ways and streams. Glacial till soils dominate the steeper side slopes. Native vegetation was prairie on the ridge tops with thin bands of timber in the valleys and ravines. Common crops are corn and soybeans with some hay. Swine and poultry operations are numerous. Resource concerns are soil erosion, soil quality, nutrient management, water quality and wildlife habitat.

105.1 Driftless Loess Hills and Bedrock: Highly dissected hills and valleys. Well drained and moderately well drained silty soils over bedrock residuum. Predominantly cropland and grazing land on ridge tops and valley bottoms with a mix of dairy, beef and cash grain agricultural enterprises. Deciduous forest on steep side slopes. Primary resource concerns are cropland soil erosion, surface water quality, grazing land and forestland productivity, stream bank erosion, and erosion during timber harvest.



Geology / Soils^{/10}

This watershed is dissected by the Mississippi River which also forms the border between Iowa and Illinois. Soils and land types of the region have been formed largely in the deposits laid down by wind, water, and ice during the Pleistocene and Holocene Epochs. These unconsolidated deposits are underlain by Paleozoic bedrock (limestone, sandstone, shale, and dolomite).

The landscape of the Copperas-Duck HUC is generally characterized by two major landforms: uplands and flood plains. These landforms are a product of glaciation, loess deposition, and more recent stream erosion, which have modified the original bedrock topography to create the present landscape.

The watershed's glacial sediments were laid down during the Illinoian glacial advance (140,000-300,000 years ago). The gently rolling uplands produced by this glacial deposition were later dissected by a system of streams that are tributaries of the Mississippi River. The landscape received a cover of wind-deposited silt and very fine sand,

Visit the online Web Soil Survey at
<http://websoilsurvey.nrcs.usda.gov> for official and
 current USDA soil information as viewable maps and
 tables. Visit the Soil Data Mart at soildatamart.usda.gov
 download SSURGO certified soil tabular /spatial data.

Geology / Soils₁₀ (continued)

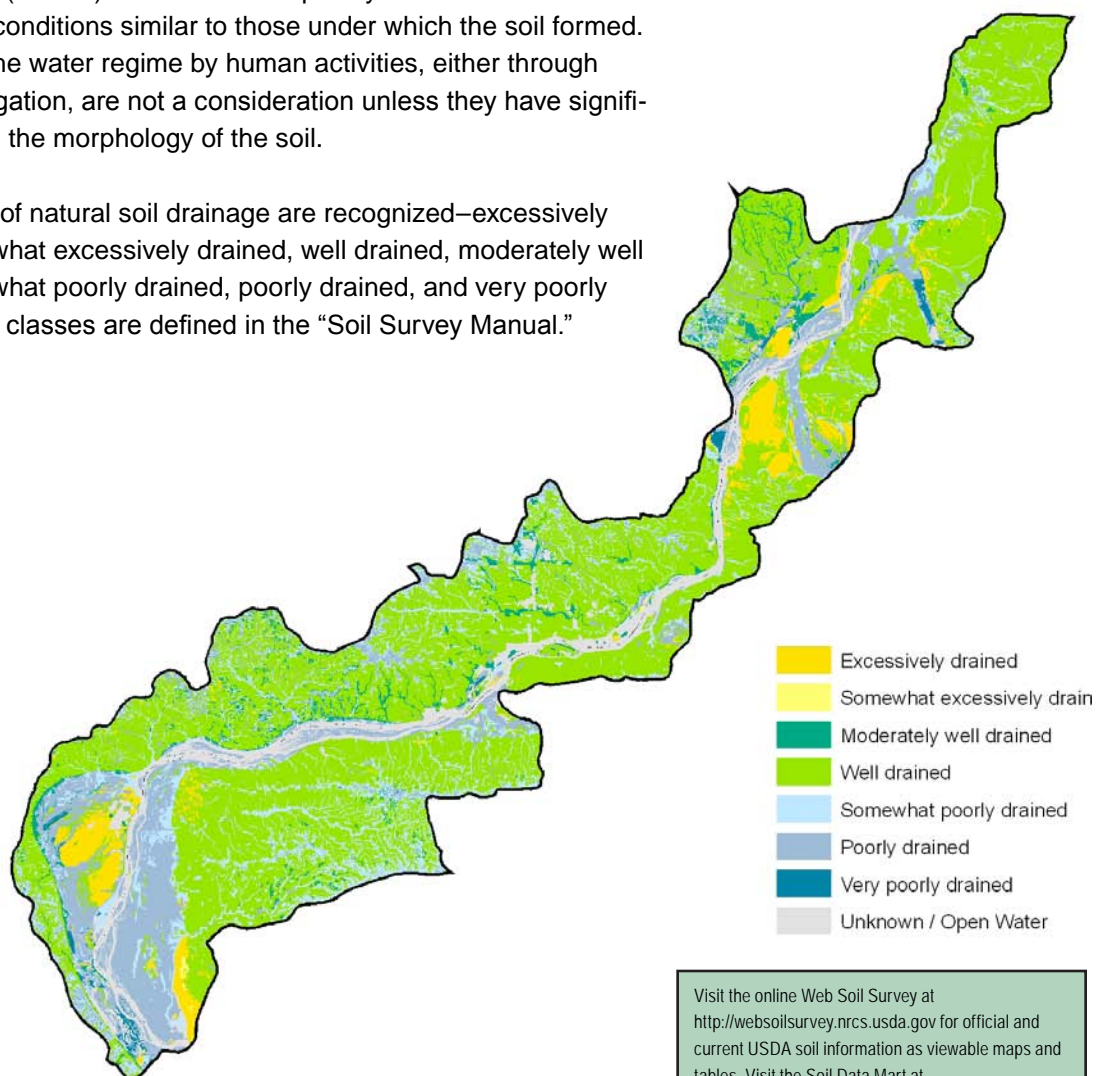
or loess, blown in from the flood plain along the Mississippi River during the most recent glacial stage--the Wisconsin (12,500-25,000 years ago)--during which time the area was free of glacial ice. The landscape consists of silty soils on ridge tops and highly dissected side slopes with drainage ways and streams. In places, glacial till soils dominate the steeper side slopes. The soils in the uplands generally consist of 5 or more feet of loess over till and limestone bedrock, both of which are exposed at the surface in a few places along the steeper slopes.

The Mississippi flows through a wide valley containing multiple levels and ages of terraces and floodplains made up of sandy, loamy and silty alluvial soils depending upon contributing sources. The terraces are often underlain by valuable gravel and cobble deposits. Wind blowing across this wide valley from the south and west deposited eolian sands that formed dunes in many places on the eastern side and a few small areas on the western side of the valley.

Drainage Classification

Drainage class (natural) refers to the frequency and duration of wet periods under conditions similar to those under which the soil formed. Alterations of the water regime by human activities, either through drainage or irrigation, are not a consideration unless they have significantly changed the morphology of the soil.

Seven classes of natural soil drainage are recognized--excessively drained, somewhat excessively drained, well drained, moderately well drained, somewhat poorly drained, poorly drained, and very poorly drained. These classes are defined in the "Soil Survey Manual."



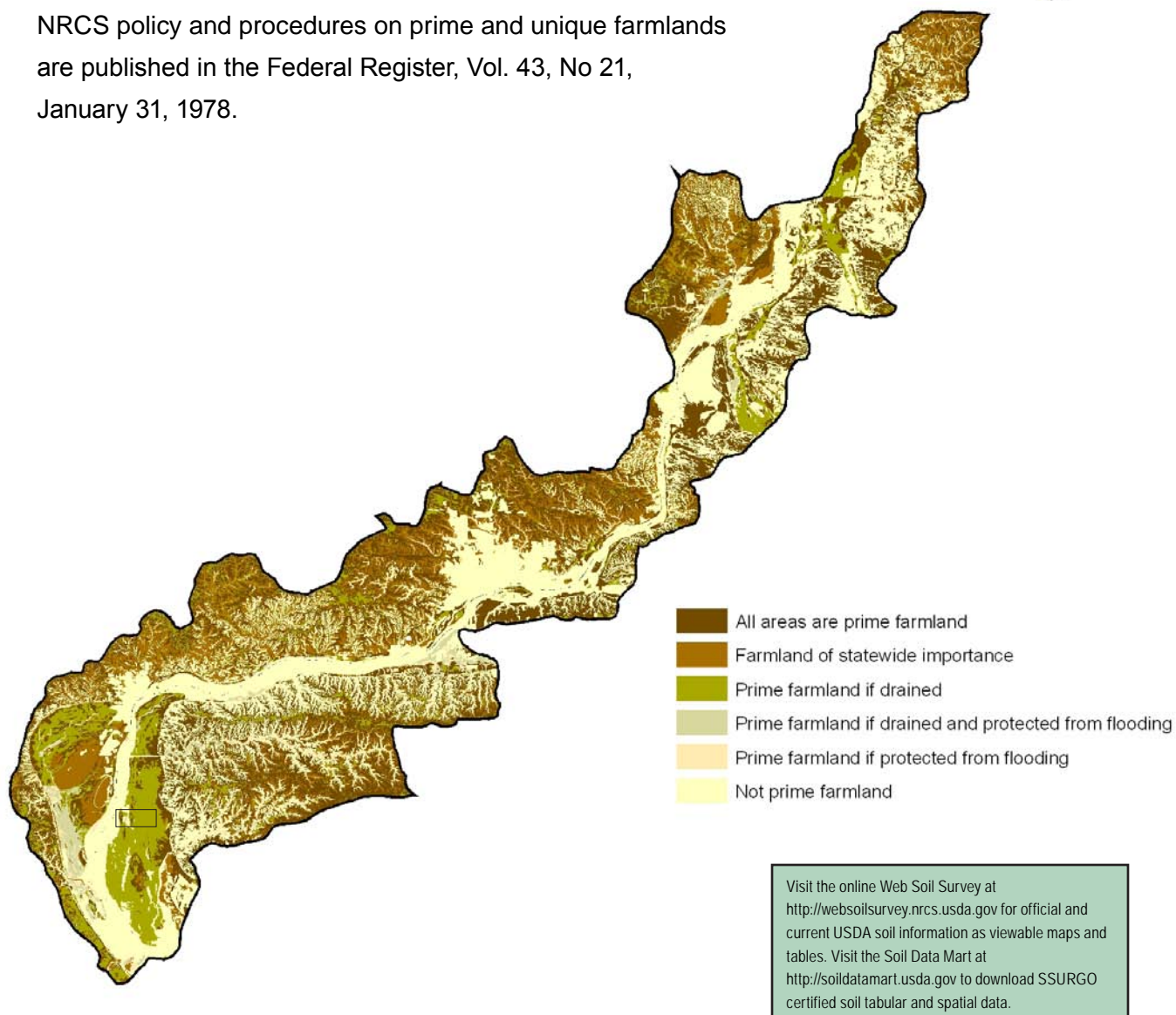
Visit the online Web Soil Survey at
<http://websoilsurvey.nrcs.usda.gov> for official and
 current USDA soil information as viewable maps and
 tables. Visit the Soil Data Mart at
<http://soildatamart.usda.gov> to download SSURGO
 certified soil tabular and spatial data.

Farmland Classification

Farmland classification identifies map units as prime farmland, farmland of statewide importance, farmland of local importance, or unique farmland.

Farmland classification identifies the location and extent of the most suitable land for producing food, feed, fiber, forage, and oilseed crops.

NRCS policy and procedures on prime and unique farmlands are published in the Federal Register, Vol. 43, No 21, January 31, 1978.

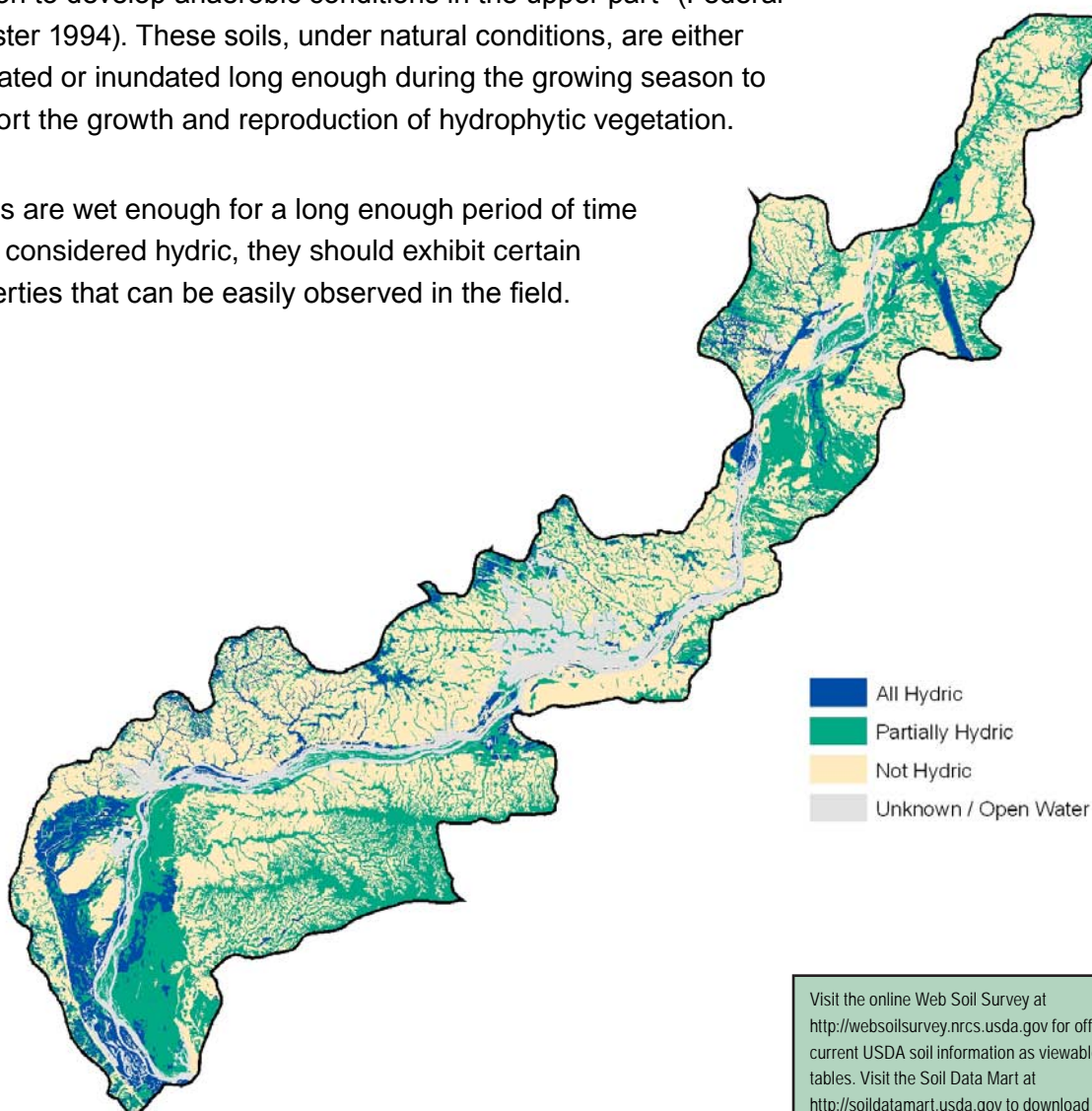


Hydric Soils

This rating provides an indication of the proportion of the map unit that meets criteria for hydric soils. Map units that are dominantly made up of hydric soils may have small areas, or inclusions of non-hydric soils in the higher positions on the landform. Map units of dominantly non-hydric soils may therefore have inclusions of hydric soils in the lower positions on the landform.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as “soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part” (Federal Register 1994). These soils, under natural conditions, are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field.



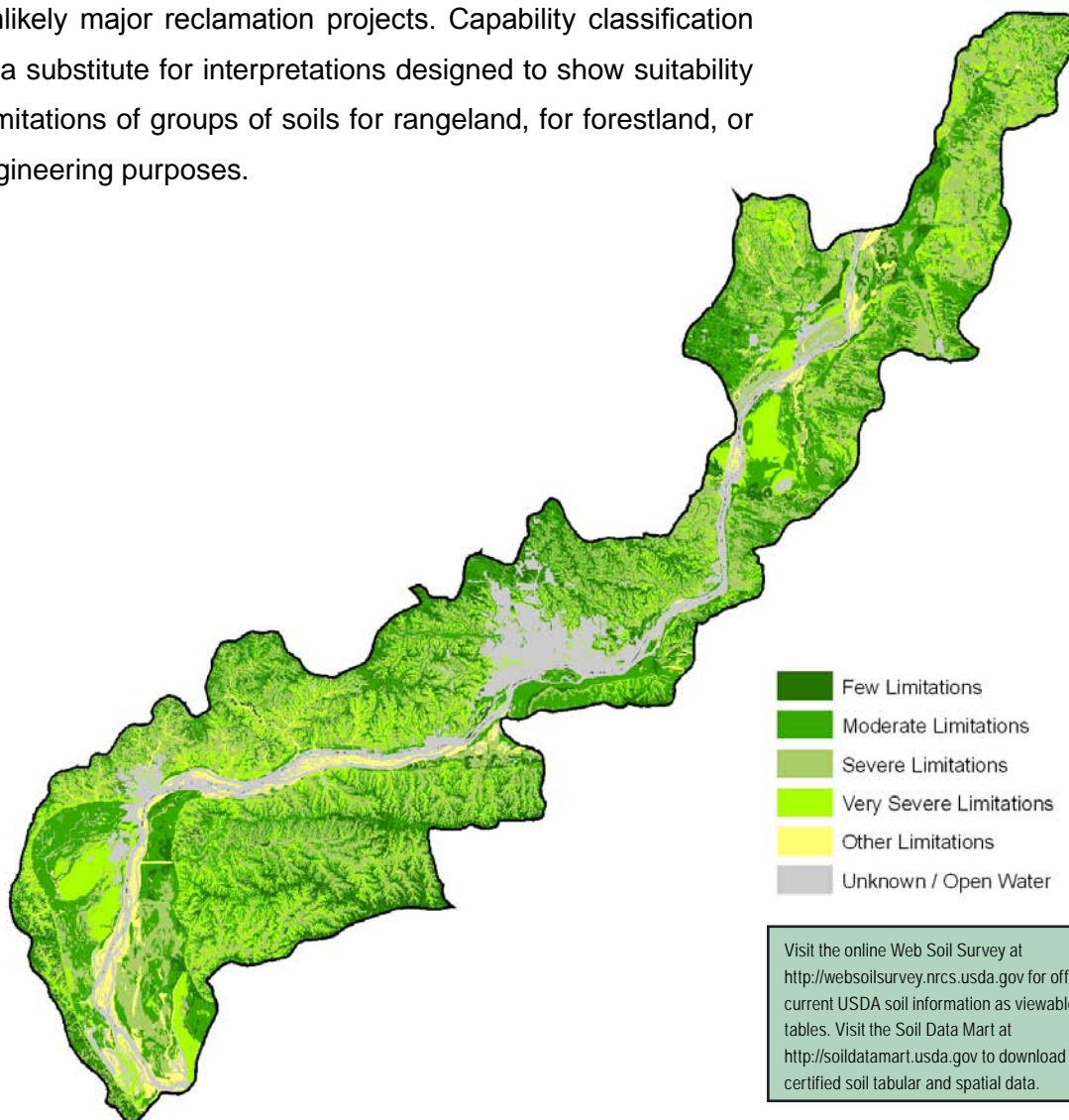
- All Hydric
- Partially Hydric
- Not Hydric
- Unknown / Open Water

Visit the online Web Soil Survey at <http://websoilsurvey.nrcs.usda.gov> for official and current USDA soil information as viewable maps and tables. Visit the Soil Data Mart at <http://soildatamart.usda.gov> to download SSURGO certified soil tabular and spatial data.

Land Capability Classification

Land capability classification shows, in a general way, the suitability of soils for most kinds of field crops. Crops that require special management are excluded. The soils are grouped according to their limitations for field crops, the risk of damage if they are used for crops, and the way they respond to management.

The criteria used in grouping the soils does not include major and generally expensive land forming that would change slope, depth, or other characteristics of the soils, nor do they include possible but unlikely major reclamation projects. Capability classification is not a substitute for interpretations designed to show suitability and limitations of groups of soils for rangeland, for forestland, or for engineering purposes.



Visit the online Web Soil Survey at
<http://websoilsurvey.nrcs.usda.gov> for official and
 current USDA soil information as viewable maps and
 tables. Visit the Soil Data Mart at
<http://soildatamart.usda.gov> to download SSURGO
 certified soil tabular and spatial data.

Performance Results System Data ¹¹

PRS Performance Measures	FY99	FY00	FY01	FY02	FY03	FY04	FY05	FY06	FY07	TOTALS*
Total Conservation Systems Planned (acres)	4,800	11,214	9,440	5,720	6,315	N/A	12,590	12,165	5,628	67,872
Total Conservation Systems Applied (acres)	3,732	9,674	8,765	3,819	3,831	N/A	10,486	9,624	4,652	54,583
Conservation Practices										
Total Waste Management (313) (numbers)	0	0	2	0	1	0	0	0	0	3
Riparian Forest Buffers (391) (acres)	85	59	79	154	44	11	1	1	5	439
Erosion Control Total Soil Saved (tons/year)	4,565	71,999	11,105	24,866	23,806	N/A	N/A	N/A	N/A	136,341
Total Nutrient Management (590) (Acres)	0	1,478	4,964	2,185	1,267	495	755	1,202	267	12,613
Pest Management Systems Applied (595A) (Acres)	133	1,478	3,301	2,056	952	114	591	1,202	7	9,834
Prescribed Grazing 528a (acres)	0	0	0	0	80	26	29	0	1,437	1,572
Tree & Shrub Establishment (612) (acres)	37	79	151	40	89	28	2	2	23	451
Residue Management (329A-C) (acres)	0	8,320	4,574	3,286	3,286	5,732	7,563	4,160	0	36,921
Total Wildlife Habitat (644 - 645) (acres)	5,890	4,242	4,307	1,591	3,541	698	731	135	625	21,760
Total Wetlands Created, Restored, or Enhanced (acres)	0	105	782	486	453	316	116	121	120	2,499
Acres enrolled in Farmbill Programs										
Conservation Reserve Program	3,732	6,406	2,418	932	985	N/A	809	930	589	16,801
Wetlands Reserve Program	3,732	0	0	0	0	N/A	100	0	172	4,004
Environmental Quality Incentives Program	3,732	817	0	420	204	N/A	1,152	399	268	6,992
Wildlife Habitat Incentive Program	0	357	0	0	0	N/A	6	0	0	363
Farmland Protection Program	0	0	0	0	0	N/A	0	0	0	0

* Totals Reflect Iowa Portion Only

Socioeconomic and Agricultural Data (Relevant)

Estimations for the Copperas-Duck subbasin indicate a current population of 211,367 people. There are approximately 83,660 households in the basin, and Median household income throughout the basin is approximately \$42,792 annually, roughly 92% of the national average.

Unemployment figures for the basin indicate an unemployment rate of 4.0% percent. Census data shows seventy percent of the population over the age of 18 is active in the workforce, and approximately 9% of the residents in the watershed are living below the national poverty level.

Assessment estimates indicate 1,376 farms in the watershed. Approximately forty six percent of the operations are less than 180 acres in size, forty five percent are from 180 to 1000 acres in size, and the remaining farms are greater than 1000 acres in size.

Of the 1,427 Operators in the Basin, sixty six percent are full time producers not reliant on off-farm income.



(IA/IL) HUC# 7080101		Total Acres:	709,411
Population Data *	Watershed Population	211,367	
	Unemployment Rate	4%	
	Median Household Income	42,792	
	% below poverty level	9%	
	Median Value of Home	75,888	
Farms	# of Farms	1,376	
	# of Operators	1,427	Percent
	# of Full Time Operators	944	66%
	# of Part Time Operators	483	34%
	Total Crop/Pasturelands:	377,255	59.6%
Farm Size	1 to 179 Acres	287	46%
	180 to 499 Acres	189	30%
	500 to 999 Acres	96	15%
	1,000 Acres or more	58	9%
Livestock & Poultry (Numbers)	Cattle - Beef	9,913	4%
	Cattle - Dairy	1,500	1%
	Chicken	2,638	1%
	Swine	112,672	44%
	Turkey	21	0%
	Other	129,916	51%
	Animal Count Total:	256,660	
	Total Permitted AFOs:	N/A	

* Adjusted by percent of HUC in the county or by percent of block group area in the HUC, depending on the level of data available

THREATENED AND ENDANGERED SPECIES ¹⁴

NRCS assists in the conservation of threatened and endangered species and avoids or prevents activities detrimental to such species. NRCS' concern for these species includes the species listed by the Secretary of the Interior (as published in the Federal Register) and species designated by state agencies. The following is a list of threatened, endangered, and candidate species as well as species of special concern that occur in the subbasin.

Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Acalypha gracilens</i>	Slender Copperleaf	Botanical	<i>Carex aggregata</i>	Glomerate Sedge	Botanical
<i>Acipenser fulvescens</i>	Lake Sturgeon	Zoological	<i>Carex conoidea</i>	Field Sedge	Botanical
<i>Agalinis gattereri</i>	Roundstem Foxglove	Botanical	<i>Carex lupuliformis</i>	False Hop Sedge	Botanical
<i>Agalinis skinneriana</i>	Pale False Foxglove	Botanical	<i>Carex lurida</i>	Shallow Sedge	Botanical
<i>Amaranthus arenicola</i>	Sand Pigweed	Botanical	<i>Carex richardsonii</i>	Richardson Sedge	Botanical
<i>Ammocrypta clara</i>	Western Sand Darter	Zoological	<i>Carex tenera</i>	Slender Sedge	Botanical
<i>Ammocrypta clarum</i>	Western Sand Darter	Zoological	<i>Carex tonsa</i>	Deep Green Sedge	Botanical
<i>Andropogon hallii</i>	Sand Bluestem	Botanical	<i>Carex umbellata</i>	Hidden Sedge	Botanical
<i>Andropogon virginicus</i>	Broom Sedge	Botanical	<i>Castilleja sessiliflora</i>	Downy Yellow Painted Cup	Botanical
<i>Angelica atropurpurea</i>	Purple Angelica	Botanical	<i>Catostomus catostomus</i>	Longnose Sucker	Zoological
<i>Aphredoderus sayanus</i>	Pirate Perch	Zoological	<i>Chelone obliqua</i>	Rose Turtlehead	Botanical
<i>Aristolochia serpentaria</i>	Virginia Snakeroot	Botanical	<i>Cirsium hillii</i>	Hill's Thistle	Botanical
<i>Armoracia aquatica</i>	Lake Cress	Botanical	<i>Cirsium muticum</i>	Swamp Thistle	Botanical
<i>Asclepias meadii</i>	Mead's Milkweed	Botanical	<i>Commelina erecta</i>	Slender Dayflower	Botanical
<i>Asimina triloba</i>	Paw Paw	Botanical	<i>Corallorhiza maculata</i>	Spotted Coral-root Orchid	Botanical
<i>Aster dumosus</i>	Ricebutton Aster	Botanical	<i>Cryptotis parva</i>	Least Shrew	Zoological
<i>Aster furcatus</i>	Forked Aster	Botanical	<i>Cumberlandia monodonta</i>	Spectaclecase	Zoological
<i>Aster linariifolius</i>	Flax-leaved Aster	Botanical	<i>Cuscuta indecora</i>	Pretty Dodder	Botanical
<i>Aster pubentior</i>	Flat Top White Aster	Botanical	<i>Cyclonaias tuberculata</i>	Purple Wartyback	Zoological
<i>Aster schreberi</i>	Schreber's Aster	Botanical	<i>Cyperus grayoides</i>	Umbrella Sedge	Botanical
<i>Astragalus distortus</i>	Bent Milk-vetch	Botanical	<i>Cypripedium candidum</i>	Small White Lady's Slipper	Botanical
<i>Besseyia bullii</i>	Kitten Tails	Botanical	<i>Cypripedium reginae</i>	Showy Lady's Slipper	Botanical
<i>Botrychium campestre</i>	Prairie Moonwort	Botanical	<i>Digitaria filiformis</i>	Slender Crabgrass	Botanical
<i>Botrychium matricariifolium</i>	Daisy-leaved Moonwort	Botanical	<i>Diodia teres</i>	Rough Buttonweed	Botanical
<i>Brasenia schreberi</i>	Water Shield	Botanical	<i>Discus macclintocki</i>	Iowa Pleistocene Snail	Zoological
<i>Buteo lineatus</i>	Red-shouldered Hawk	Zoological	<i>Dryopteris marginalis</i>	Marginal Shield Fern	Botanical
<i>Cacalia suaveolens</i>	Sweet Indian Plantain	Botanical	<i>Eleocharis ovata</i>	Ovate Spikerush	Botanical
<i>Callirhoe triangulata</i>	Poppy Mallow	Botanical	<i>Ellipsaria lineolata</i>	Butterfly	Zoological
<i>Callitriche heterophylla</i>	Water Starwort	Botanical	<i>Emydoidea blandingii</i>	Blanding's Turtle	Zoological
<i>Calopogon tuberosus</i>	Grass Pink	Botanical	<i>Eriophorum angustifolium</i>	Tall Cotton Grass	Botanical
<i>Calystegia spithamea</i>	Low Bindweed	Botanical	<i>Erynnis baptisiae</i>	Wild Indigo Dusky Wing	Zoological

THREATENED AND ENDANGERED SPECIES

14

Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Eurytides marcellus</i>	Zebra Swallowtail	Zoological	<i>Lanius ludovicianus</i>	Loggerhead Shrike	Zoological
<i>Erynnis lucilius</i>	Columbine Dusky Wing	Zoological	<i>Lespedeza leptostachya</i>	Prairie Bush Clover	Botanical
<i>Esox americanus</i>	Grass Pickerel	Zoological	<i>Leucospora multifida</i>	Cliff Conohea	Botanical
<i>Etheostoma chlorosoma</i>	Bluntnose Darter	Zoological	<i>Ligumia recta</i>	Black Sandshell	Zoological
<i>Etheostoma spectabile</i>	Orangethroat Darter	Zoological	<i>Liochlorophis vernalis</i>	Smooth Green Snake	Zoological
<i>Euphydryas phaeton</i>	Baltimore	Zoological	<i>Ludwigia peploides</i>	False Loosestrife	Botanical
<i>Filipendula rubra</i>	Queen-of-the-prairie	Botanical	<i>Lycopodium clavatum</i>	Running Pine	Botanical
<i>Fimbristylis autumnalis</i>	Slender Fimbry	Botanical	<i>Lycopodium dendroideum</i>	Ground Pine	Botanical
<i>Fusconaia ebena</i>	Ebonyshell	Zoological	<i>Lycopodium digitatum</i>	Crowfoot Clubmoss	Botanical
<i>Gaylussacia baccata</i>	Black Huckleberry	Botanical	<i>Malaxis unifolia</i>	Green Adder's Mouth	Botanical
<i>Geum vernum</i>	Spring Avens	Botanical	<i>Malvastrum hispidum</i>	Globe Mallow	Botanical
<i>Glaucomys volans</i>	Southern Flying Squirrel	Zoological	<i>Mentzelia decapetala</i>	Ten Petaled Mentzelia	Botanical
<i>Grus canadensis</i>	Sandhill Crane	Zoological	<i>Menyanthes trifoliata</i>	Buckbean	Botanical
<i>Haliaeetus leucocephalus</i>	Bald Eagle	Zoological	<i>Mimulus glabratus</i>	Yellow Monkey Flower	Botanical
<i>Hemidactylium scutatum</i>	Four-toed Salamander	Zoological	<i>Minuartia michauxii</i>	Rock Sandwort	Botanical
<i>Hesperia ottoe</i>	Ottoe Skipper	Zoological	<i>Monotropa hypopithys</i>	Pinesap	Botanical
<i>Heteranthera limosa</i>	Blue Mud-plantain	Botanical	<i>Myotis sodalis</i>	Indiana Bat	Zoological
<i>Heterodon nasicus</i>	Western Hognose Snake	Zoological	<i>Myriophyllum pinnatum</i>	Cutleaf Water-milfoil	Botanical
<i>Heterotheca villosa</i>	Golden Aster	Botanical	<i>Nerodia erythrogaster neglecta</i>	Copperbelly Water Snake	Zoological
<i>Hudsonia tomentosa</i>	False Heather	Botanical	<i>Nerodia rhombifer</i>	Diamondback Water Snake	Zoological
<i>Hybopsis amnis</i>	Pallid Shiner	Zoological	<i>Notophthalmus viridescens</i>	Central Newt	Zoological
<i>Hydrocotyle ranunculoides</i>	Water-pennywort	Botanical	<i>Notropis heterolepis</i>	Blacknose Shiner	Zoological
<i>Ichthyomyzon castaneus</i>	Chestnut Lamprey	Zoological	<i>Notropis texanus</i>	Weed Shiner	Zoological
<i>Ipomoea lacunosa</i>	Small Morning Glory	Botanical	<i>Noturus nocturnus</i>	Freckled Madtom	Zoological
<i>Isoetes melanopoda</i>	Black-footed Quillwort	Botanical	<i>Nyctanassa violacea</i>	Yellow-crowned Night Heron	Zoological
<i>Ixobrychus exilis</i>	Least Bittern	Zoological	<i>Nycticorax nycticorax</i>	Black-crowned Night Heron	Zoological
<i>Juncus effusus</i>	Soft Rush	Botanical	<i>Ophioglossum pusillum</i>	Northern Adder's-tongue	Botanical
<i>Juncus greeniei</i>	Green's Rush	Botanical	<i>Opsopoeodus emiliae</i>	Pugnose Minnow	Zoological
<i>Juncus marginatus</i>	Grassleaf Rush	Botanical	<i>Orobanche ludoviciana</i>	Broomrape	Botanical
<i>Kinostemon flavescens</i>	Yellow Mud Turtle	Zoological	<i>Osmunda cinnamomea</i>	Cinnamon Fern	Botanical
<i>Krigia virginica</i>	Dwarf Dandelion	Botanical	<i>Osmunda regalis</i>	Royal Fern	Botanical
<i>Lampsilis higginsii</i>	Higgin's-eye Pearly Mussel	Zoological	<i>Panicum philadelphicum</i>	Philadelphia Panic Grass	Botanical
<i>Lampsilis teres</i>	Yellow Sandshell	Zoological	<i>Penstemon grandiflorus</i>	Large-flowered Beard Tongue	Botanical

THREATENED AND ENDANGERED SPECIES ¹⁴

Scientific Name	Common Name	Type	Scientific Name	Common Name	Type
<i>Perognathus flavescens</i>	Plains Pocket Mouse	Zoological	<i>Rubus hispidus</i>	Dewberry	Botanical
<i>Phlox bifida</i>	Cleft Phlox	Botanical	<i>Scirpus hallii</i>	Hall Bulrush	Botanical
<i>Pituophis catenifer sayi</i>	Bullsnake	Zoological	<i>Selaginella eclipses</i>	Meadow Spikemoss	Botanical
<i>Platanthera clavellata</i>	Small Green Woodland Orchid	Botanical	<i>Selaginella rupestris</i>	Ledge Spikemoss	Botanical
<i>Platanthera flava</i>	Tubercled Orchid	Botanical	<i>Sistrurus catenatus</i>	Massasauga Rattlesnake	Zoological
<i>Platanthera leucophaea</i>	Eastern Prairie Fringed Orchid	Botanical	<i>Solidago patula</i>	Roundleaf Goldenrod	Botanical
<i>Platanthera psycodes</i>	Purple Fringed Orchid	Botanical	<i>Speyeria idalia</i>	Regal Fritillary	Zoological
<i>Plethobasus cyphus</i>	Sheepnose	Zoological	<i>Spiranthes lacera</i>	Slender Ladies'-tresses	Botanical
<i>Pleurobema sintoxia</i>	Round Pigtoe	Zoological	<i>Spiranthes magnicamporum</i>	Great Plains Ladies'-tresses	Botanical
<i>Poa chapmaniana</i>	Chapman Bluegrass	Botanical	<i>Spiranthes ovalis</i>	Oval Ladies'-tresses	Botanical
<i>Poa languida</i>	Drooping Bluegrass	Botanical	<i>Sternotherus odoratus</i>	Common Musk Turtle	Zoological
<i>Poanes zabulon</i>	Zabulon Skipper	Zoological	<i>Strophitus undulatus</i>	Creeper	Zoological
<i>Polanisia jamesii</i>	James Cristatella	Botanical	<i>Stylisma pickeringii</i>	Pickering Morning-glory	Botanical
<i>Polygala cruciata</i>	Crossleaf Milkwort	Botanical	<i>Synaptomys cooperi</i>	Southern Bog Lemming	Zoological
<i>Polygala incarnata</i>	Pink Milkwort	Botanical	<i>Terrapene ornata</i>	Ornate Box Turtle	Zoological
<i>Polygala polygama</i>	Racemed Milkwort	Botanical	<i>Tomanthera auriculata</i>	Earleaf Foxglove	Botanical
<i>Polygonella articulata</i>	Eastern Jointweed	Botanical	<i>Tritogonia verrucosa</i>	Pistolgrip	Zoological
<i>Potamogeton amplifolius</i>	Large-leaf Pondweed	Botanical	<i>Tyto alba</i>	Barn Owl	Zoological
<i>Potamogeton epihydrus</i>	Nuttall Pondweed	Botanical	<i>Utricularia gibba</i>	Humped Bladderwort	Botanical
<i>Potamogeton vaseyi</i>	Vasey Pondweed	Botanical	<i>Valeriana edulis</i>	Valerian	Botanical
<i>Prionopsis ciliata</i>	Prionopsis	Botanical	<i>Veratrum woodii</i>	False Hellebore	Botanical
<i>Problema byssus</i>	Byssus Skipper	Zoological	<i>Veronica scutellata</i>	Marsh-speedwell	Botanical
<i>Proserpinaca palustris</i>	Marsh Mermaid-weed	Botanical	<i>Viola lanceolata</i>	Lance-leaved Violet	Botanical
<i>Prunus pumila</i>	Sand Cherry	Botanical	<i>Vitis aestivalis</i>	Summer Grape	Botanical
<i>Rhexia virginica</i>	Meadow Beauty	Botanical	<i>Xanthocephalus xanthocephalus</i>	Yellow-headed Blackbird	Zoological
<i>Rotala ramosior</i>	Toothcup	Botanical	<i>Xyris torta</i>	Yellow-eyed Grass	Botanical

RESOURCE CONCERNS

County Soil and Water Conservation Districts in the watershed have identified the following resource concerns as top priorities for conservation and cost sharing efforts:

Sediment and Erosion Control

Excessive amounts of suspended solids eroded from cropland, urban land, and streambanks are degrading soil quality and surface water quality.

Nutrient Management

Excessive amounts of nutrients, namely phosphorus and nitrogen, contaminate groundwater and surface waters. Major sources of these nutrients are: excessive animal waste and other nutrient applications on cropland, municipal wastewater, and aging or non-compliant septic systems.

Fish and wildlife

Populations and/or habitat quantity and quality have reached a level that one or more species are in danger of or threatened with extinction. Due to the historical draining of much of the areas wetlands and agricultural practices, priority is given to both wetland preservation and restoration.

Water Quantity

Water supplies are not efficiently used on irrigated land.

Stormwater Management

Stormwater runoff volumes from impervious surfaces will likely increase as development of the watershed continues.

Livestock Concerns

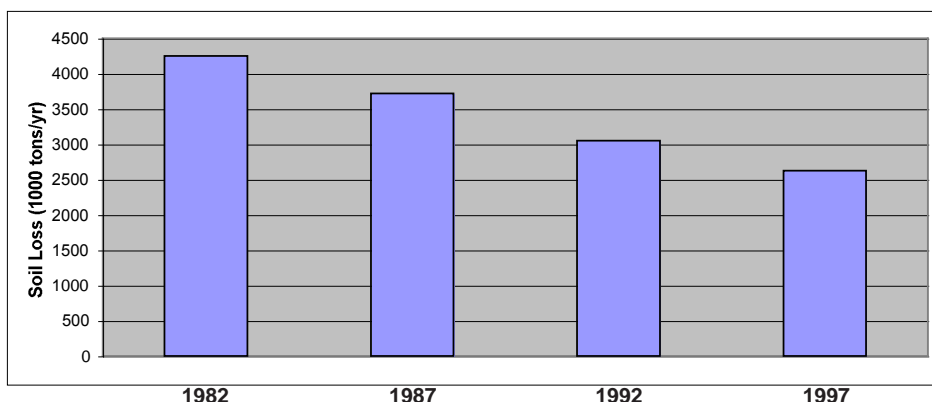
Total feed and forage is insufficient to meet the nutritional and production needs of livestock.

Land use and management operations produce offensive smells and particulate matter causing potential health hazards to humans and animals.

The quantity, quality and distribution of drinking water are insufficient to meet livestock production goals.

NRI Soil Loss Estimates ¹³

- NRI estimates for sheet and rill erosion by water on the cropland and pastureland **decreased** by approximately 1,621,000 tons (62%) of soil between 1982 and 1997.



Watershed Projects, Plans and Monitoring ^{/15}

Mitchell Park Ravine Watershed Project
East Moline, Illinois

Greater Eliza Watershed Project
Mercer County, Illinois

Green Roof Project on the McKessen Building
Rock Island, Illinois

Animal Waste BMP Program
Carroll, Whiteside, Lee, Ogle, Stephenson, and
JoDaviess County, Illinois

Duck Creek Watershed Project
Scott County, Iowa

**Copperas Creek Watershed Planning
Committee**
Rock Island County, Illinois

Streams in the Copperas-Duck Watershed monitored by IOWATER volunteers:

- Cochran Pond
- Augie Stream
- Crow Creek
- Sand Creek
- Duck Creek
- Warren Creek
- Goose Creek
- Black Hawk Creek
- Greeway Creek
- Kyte Creek
- Harts Mill Creek
- Sheldon Creek
- Leroy-Robin Spring
- Wildcat Den
- Mad Creek
- Washington School Creek
- Mill Creek
- Sugar Creek
- Muscatine Slough
- Spencer Creek
- Nahant Marsh
- Rock Creek
- North Main Twain
- Ammonia Creek
- Pine Creek
- Geneva Creek

Streams where IOWATER volunteers completed snapshot sampling:

- Pine Creek
- Mad Creek
- Sweetland Creek
- Muscatine Slough
- Geneva Creek
- Duck Creek
- Crow Creek
- Blackhawk Creek
- Candlelight Creek
- Goose Creek
- Hanlin Creek
- Pigeon Creek
- McManus Creek
- Nahant Marsh
- Pheasant Creek
- West Pigeon
- Willow Creek
- East Pigeon
- Donaldson Creek
- McCarty Creek
- Bud Creek
- Robin Creek
- Stafford Creek
- Silver Creek
- Moore Creek
- Walnut Creek
- Dodges Creek

Conservation Districts, Organizations & Partners

- **Illinois Department of Agriculture**
Bureau of Land & Water Resources
P.O. Box 19281 State Fairgrounds
Springfield, Illinois 62794-9281
Phone 217-782-6297
- **Mercer County SWCD**
308 SE 8th Avenue
Aledo, IL 61231
Phone: 309/582-5153 (Ext. 3)
- **Association of Illinois Soil and Water Conservation Districts**
4285 N. Walnut Street Road
Springfield, Illinois 62707
Phone 217-744-3414
- **Rock Island County SWCD**
3020 E. 1st Avenue
Milan, IL 61264
Phone: 309-764-1486, ext. 3
- **Illinois Department of Natural Resources**
One Natural Resources Way
Springfield, Illinois 62702-1271
Phone 217-782-7454
- **Whiteside County SWCD**
USDA Bldg. 16255 Liberty St.
Morrison, IL 61270
Phone: 815-772-2124, ext. 3
- **Illinois Environmental Protection Agency**
1021 North Grand Avenue E.
P.O. Box 19276
Springfield, Illinois 62794-9276
Phone 217-524-2743
- **Carroll County SWCD**
807C South Clay Street
Mt. Carroll, IL 61053
Phone: 815-244-8732, ext. 3
- **Illinois NRCS-USDA**
2118 W. Park Court
Champaign, Illinois 61821
Phone 217-353-6600
- **Scott SWCD**
8370 Hillandale Road
Davenport, Iowa
Phone: 563-391-1403
- **Iowa NRCS-USDA**
210 Walnut Street, Room 693
Des Moines, Iowa 50309
Phone: 515-284-6655
- **Clinton SWCD**
1212 17th Avenue
Dewitt, Iowa IA
Phone: (563) 659-3456
- **Iowa Division of Agriculture and Land Stewardship**
Division of Soil Conservation
Wallace State Office Building
502 E. 9th Street
Des Moines, Iowa 50319
Phone 515-281-5851
- **Muscatine SWCD**
3500 Oakview Drive A
Muscatine, Iowa
Phone: 563-263-7944
- **Conservation Districts of Iowa**
P.O. Box 801
Chariton, Iowa 50049
Phone 641-744-4461
- **Louisa SWCD**
260 Mulberry Street Suite 2
Wapello, Iowa 52653
Phone: (319) 523-6411
- **Partners of Scott County Watersheds**
8370 Hillandale Rd
Davenport, IA 52806
Phone: 563-391-1403 x3
- **Eastern Iowa Community College**
306 West River Drive
Davenport, IA 52801
Phone: 1-800-462-3255
- **Davenport Community School District**
1606 Brady Street
Davenport, IA 52803
Phone: 563-336-5000
- **Quad City Home Builders Association**
3528 Jersey Ridge Road
Davenport, IA 52807
Phone: 563-441-5692
- **Scott County Farm Bureau**
1721 LeClaire Road
Eldridge, IA 52748
Phone: 563-285-4632
- **River Action**
822 E. River Drive
Davenport, IA 52803
Phone: 563-322-2969
- **Blackhawk Hills RC&D, Inc.**
102 East Route 30, Suite 2
Rock Falls, IL 61071
Phone: 815-625-3854
- **Interstate RC&D**
3020 E. 1st. Avenue
Milan, IL 61264
Phone: 309-764-1486, ext. 4
- **Geode RC&D**
308 North Third
Burlington, Iowa 52601-2060
Phone 319-752-6395
- **Limestone Bluffs RC&D**
1000 East Platt St. Suite 4
Maquoketa, Iowa 52060-2530
Phone 563-652-5104
- **Conservation Design Forum**
375 W First Street
Elmhurst, IL 60126
630-559-2000
- **IOWATER**
109 Trowbridge Hall
Iowa City, IA 52242
Phone: 319-335-1761

Footnotes / Bibliography

1. Ownership Layer – Source: IA Stewardship Data: IA-GAP Stewardship, Iowa Gap Analysis Program. IL Stewardship Data: Illinois Gap Analysis Project (IL-GAP). 1/1/2002. GAP stewardship datasets are assumed to be the most complete stewardship conservation layer available for the states of Iowa and Illinois. Assumptions were made that existing digital data acquired from outside agencies had previously been checked for errors and was assumed to be correct.
2. 2001 National Land Cover Dataset (NLCD) - Originator: U.S. Geological Survey (USGS); Publication date: 20010631; Title: National Land Cover Database, Edition: 1.0; Geospatial data presentation form: Raster digital data; Publisher: U.S. Geological Survey, Sioux Falls, SD, USA.
3. Ownership layer classes grouped to calculate Public ownership vs. Private and Tribal ownership by Minnesota NRCS Rapid Watershed Assessment Staff. Land cover / Land use data was then extracted from the National Landcover Dataset Classification System and related to ownership class polygons.
4. U.S. Geological Survey National Hydrography Dataset (NHD) 1:100,000-scale Digital Line Graph (DLG) medium resolution hydrography data, integrated with reach-related information from the U.S. Environmental Protection Agency Reach File Version 3.0 (RF3). The Hydro 100k layer was compared to 303(d) data to derive percentage of listed waters.
5. Land Cover / Land Use / Hydro 100k Buffer. Using the 100k Hydrology dataset, All streams within HUC were spatially buffered to a distance of 100 ft. National Landcover Dataset attributes were extracted for the spatial buffer to demonstrate the vegetation and landuse in vulnerable areas adjacent to waterways.
6. Land Capability Class. SSURGO - Nonirrigated Capability Class - Land Classification. Originator: U.S. Department of Agriculture, Natural Resources Conservation Service . The survey area dates of the downloaded original SSURGO version 2 data varies among counties. For more information: <http://soils.usda.gov/survey/geography/ssurgo/>
7. 1997 NRI Irrigated Land Estimates. Irrigated land: Land that shows evidence of being irrigated during the year of the inventory or during two or more years out of the last four years. Water is supplied to crops by ditches, pipes, or other conduits. Water spreading is not considered irrigation; it is recorded as a conservation practice. [NRI-97] For more information: <http://www.nrcs.usda.gov/technical/NRI/>
8. 303(d) Stream data. Iowa 2006 Impaired Streams List (per Section 303(d) Clean Water Act), 2006, Iowa Department of Natural Resources. Illinois Impaired Streams: Illinois Integrated Water Quality Report and Section 303(d) List - 2006. Additional Data and updates available from the EPA online: <http://www.epa.gov/OWOW/tmdl/>
9. National Coordinated Common Resource Area (CRA) Geographic Database. A Common Resource Area (CRA) map delineation is defined as a geographical area where resource concerns, problems, or treatment needs are similar. It is considered a subdivision of an existing Major Land Resource Area (MLRA) map delineation or polygon. Landscape conditions, soil, climate, human considerations, and other natural resource information are used to determine the geographic boundaries of a Common Resource

Footnotes / Bibliography (continued)

10. Soil Survey Geographic Database (SSURGO) Tabular and spatial data obtained from NRCS Soil Data Mart at <http://soildatamart.nrcs.gov>. Publication dates vary by county. Component and layer tables were linked to the spatial data via SDV 5.1 and ARCGIS 9.1 to derive the soil classifications presented in these examples. Highly Erodible Land Classification Data when present obtained from USDA/NRCS EFOTG Section II, County Soil Data. HEL classifications were appended to SSURGO spatial data via an ARCEdit session. Addendum and publication dates vary by county.

11. Performance Results System Data: The Performance Results System uses direct entry and data extracted from other systems to consolidate performance results, including lands removed from production through farm bill programs. Data Reported at the USGS 8-Digit Hydrologic Unit Code (HUC) level using only Iowa data. More info: <http://ias.sc.egov.usda.gov/prshome/>

12. Socioeconomic and Agricultural Census Data were taken from the U.S. Population Census, 2000 and 2002 Agricultural Census and adjusted by percent of HUC in the county or by percent of zip code area in the HUC, depending on the level of data available.

13. 1997 NRI Estimates for sheet and rill erosion (USLE). The NRI estimates sheet and rill erosion together using the Universal Soil Loss Equation (USLE). The Revised Universal Soil Loss Equation (RUSLE) was not used in the 1997 NRI. RUSLE was not available for previous inventories, therefore the use of USLE was continued to preserve the trending capacity of the NRI database. Wind erosion data on (WEQ) was not collected in this watershed.

14. Federally listed endangered and threatened species for Iowa were obtained from the Iowa Department of Natural Resources web site: <https://programs.iowadnr.gov/naturalareasinventory/pages/Query.aspx>
Illinois data was obtained from the United States Fish and Wildlife website: http://www.fws.gov/midwest/endangered/lists/cty_indx.html. State listed species for the watershed in Illinois was determined by Illinois NRCS State Biologist. The Iowa and Illinois data was combined into one list.

15. Watershed Projects, Plans, Monitoring. Illinois projects were found at the Illinois EPA website: <http://www.epa.state.il.us/water/watershed/reports/biannual-319/index.html> and the Illinois Department of Agriculture, Bureau of Land and Water Resources report "Illinois Conservation Partnership Annual Report-2007" found at: <http://www.agr.state.il.us/Environment/LandWater/index.html>.

- Iowa information was obtained from the Iowa Department of Natural Resources at: http://www.iowadnr.gov/water/watershed/project_list.html and the Iowa Department of Agriculture and Land Stewardship at: <http://www.agriculture.state.ia.us/waterResources/watershedProtection.asp>.
- IOWATER data is found at: <http://www.iowater.net/>

Additional Information on listed individual projects can be obtained from the noted parties.